

Year Level: 8

SEMESTER ONE		SEMESTER TWO	
TERM 1	TERM 2	TERM 3	TERM 4
<p>Topic 1: Let's Investigate (~14 lessons)</p> <ul style="list-style-type: none"> • Safety & equipment • Scientific method <ul style="list-style-type: none"> ◦ E.g. firestick farming techniques used by Indigenous Australians • Inferring and predicting. • Designing Experiments: <ul style="list-style-type: none"> ◦ Ethics ◦ Fair test ◦ Controlling variables • Qualitative vs quantitative data • Evaluating experiments: <ul style="list-style-type: none"> ◦ Sources of error ◦ Reliability of data ◦ Validity of conclusions • Report Writing. <p>Topic 2: Life Under a Microscope (~ 14 lessons)</p> <ul style="list-style-type: none"> • Discovering cells & the cell theory • Microscope development • Using microscopes to examine cells • Single-celled organisms • Plant vs animal vs fungal cells • Cell structures & function • Cell division (mitosis), reproduction & repair • Scientific advancements in disease treatment & control • Cells to systems 	<p>Topic 3: Changing Earth (Ch6) (~12 lessons)</p> <ul style="list-style-type: none"> • Formation of rocks • Using a key to identify common rock types • Identifying rocks: metamorphic, igneous, sedimentary • Timescale of rock formation • Rocks as a collection of different minerals • Forces making rocks and minerals • Extraction of mineral resources • Rocks as valuable resources (industry, fossil record) • Role of Science in the development of technology for earthquake predictions <p>Topic 4: The Nature of Matter (~10 lessons)</p> <ul style="list-style-type: none"> • Why do we need a model? • Particle arrangement in solids, liquids & gases • Particle model (temperature and motion) • Evolution of the particle theory • Elements versus compounds • Symbols and formulae • Using the periodic table 	<p>Topic 5: Functioning Organisms (~ 13 lessons)</p> <ul style="list-style-type: none"> • What have we learnt about the human body? (Summary) • Digestive, cardio-thoracic (structure & function), main organs (structure & function) • Comparing similar systems in different organisms. (digestive: herbivore vs carnivore vs omnivore; respiratory: mammals vs fish) • Technological advances (repair & replacement of organs & ethical issues) • Asexual v sexual reproduction • Comparing reproductive systems of organisms (animal & plant) • Technology & reproduction (IVF, selective breeding, cloning) <p>Topic 6: Making Things Happen (~10 lessons)</p> <ul style="list-style-type: none"> • Different forms of energy (summary) • Kinetic energy (moving) • Potential energy (stored –includes gravitational, chemical & elastic) • Effects of different types of energy • Energy changes (flowchart) • Heat as a by-product of energy transfer • Energy efficiency and consumption & technological advances (electric & solar cars) 	<p>Topic 7: Making New Substances (~10 lessons)</p> <ul style="list-style-type: none"> • Physical vs chemical change • Evidence of reactions • Combining elements to form compounds (simple reactions) • Properties of substances related to use • Using chemical reactions to create new materials. (eg. synthetic fibres, pharmaceuticals) <p>HEADSTART TOPIC Science of Thunderstorms (2 weeks – 4 or 6 lessons)</p> <ul style="list-style-type: none"> • Structure of atoms • Charging objects • Van de Graaff generator • Lightning and thunder <p>*This will be taught during Head Start</p>



Standards and progression point examples

Level 8 Achievement Standard

By the end of Level 8, students investigate different forms of energy and explain how energy transfers and transformations cause change in simple systems. They use the particle model to predict, compare and explain the physical and chemical properties and behaviours of substances. They describe and apply appropriate techniques to separate pure substances from mixtures. They provide evidence for observed chemical changes in terms of colour change, heat change, gas production and precipitate formation. They use equations to describe simple chemical reactions. They analyse the relationship between structure and function at cell, organ and body system levels. They use dichotomous keys to identify and classify living things. They explain how living organisms can be classified into major taxonomic groups based on observable similarities and differences. They predict the effect of environmental changes on feeding relationships. They distinguish between different types of simple machines and predict, represent and analyse the effects of unbalanced forces, including Earth's gravity, on motion. They compare processes of rock formation, including the time scales involved, and analyse how the sustainable use of resources depends on the way they are formed and cycle through Earth systems. They model how the relative positions of Earth, sun and moon affect phenomena on Earth.

Students explain how evidence has led to an improved understanding of a scientific idea. They discuss how science knowledge can be applied to generate solutions to contemporary problems and explain how these solutions may impact on society

By the end of Level 8, students identify and construct questions and problems that they can investigate scientifically. They plan experiments, identifying variables to be changed, measured and controlled. They consider accuracy and ethics when planning investigations, including designing field or experimental methods. Students summarise data from different sources and construct representations of their data to reveal and analyse patterns and trends, and use these when justifying their conclusions. They explain how modifications to methods could improve the quality of their data and apply their own scientific knowledge and investigation findings to evaluate claims made by others. They use appropriate scientific language and representations to communicate science ideas, methods and findings in a range of text types.